CHESTERFIELD COUNTY MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) INSPECTION

CHESTERFIELD
DEPARTMENT OF ENVIRONMENTAL ENGINEERING
9800 GOVERNMENT CENTER PARKWAY
CHESTERFIELD, VA 23832

FINAL
NOVEMBER 2010

U.S. Environmental Protection Agency, Region III
Water Protection Division
Office of NPDES Enforcement (3WP42)
1650 Arch Street
Philadelphia, PA 19103

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EXECUTIVE SUMMARY

Municipal Separate Storm Sewer System (MS4)
Inspection Report
Chesterfield County, Virginia

From April 21 through 22, 2010, a compliance inspection team comprising staff from the U.S. Environmental Protection Agency (EPA) Region 3, Virginia Department of Conservation and Recreation (DCR), EPA's contractor, Eastern Research Group, Inc. (ERG), and ERG's subcontractor, PG Environmental, LLC, inspected the municipal separate storm sewer system (MS4) program of the county of Chesterfield, Virginia. Discharges from the county's MS4 are regulated by Virginia Pollution Discharge Elimination System (VPDES) Permit Number VA0088609, effective March 24, 2003. The purpose of this inspection was to obtain information for evaluating the County's compliance with Permit VA0088609, which is included in Attachment 1. The inspection focused specifically on the following sections of the Permit in relation to the county's MS4 program: (1) Part I.B.1.a - Structural and Source Control Measures; (2) Part I.B.1.b - Unauthorized Discharges and Improper Disposal; (3) Part I.B.1.c - Runoff from Industrial and Commercial Facilities; and (4) Part I.B.1.d - Runoff from Construction Sites.

Based on the information obtained and reviewed, the EPA's compliance inspection team made several observations concerning Chesterfield County's MS4 program related to the specific permit requirements evaluated. Table 1 summarizes the permit requirements and the observations noted by the inspection team.

Table 1. Observations Identified During the Chesterfield Inspection (4/21/10 – 4/22/10)

Virginia Permit Number VA0088609 Requirement	Observations
I.B – Storm Water Management Program	Observation 1. The county of Chesterfield did not maintain a written description of its current Storm Water Management Program.
I.B.1.a – Structural and Source Control Measures	No observations for this element of the permit.
I.B.1.b – Unauthorized Discharges and Improper Disposal	Observation 2. The county of Chesterfield was not providing adequate resources to complete annual dry weather screening inspections of identified outfalls. Observation 3. The county of Chesterfield was not completing and documenting follow up action taken after evidence of an illicit discharge was observed.

Table 1. Observations Identified During the Chesterfield Inspection (4/21/10 – 4/22/10)

Virginia Permit Number VA0088609 Requirement	Observations	
I.B.1.c – Runoff from Industrial and Commercial Facilities	Observation 4.	The county of Chesterfield did not have an industrial inspector to complete the inspections required by I.B.1.c.(1) and I.B.1.c(2) of the permit.
	Observation 5.	The county of Chesterfield did not have a formal training program for identifying stormwater issues on industrial and commercial sites.
	Observation 6.	The county of Chesterfield was not adequately minimizing pollutant discharges from county industrial facilities.
I.B.1.d – Runoff from Construction Sites	Observation 7.	The county of Chesterfield had not developed standard procedures for consistent and progressive escalation of its available enforcement actions based on inspection observations.
	Observation 8.	The county of Chesterfield Erosion and Sediment Control (ESC) inspectors did not assess non-sediment, construction site pollutant sources.
	Observation 9.	The county of Chesterfield's plan review and approval, field inspection, and plan change processes were not in accordance with the Chesterfield County Erosion and Sediment Control Ordinance for the Magnolia Lakes construction site.

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I. INTRODUCTION

From April 21 through 22, 2010, a compliance inspection team comprising staff from the U.S. Environmental Protection Agency (EPA) Region 3, Virginia Department of Conservation and Recreation (DCR), EPA's contractor, Eastern Research Group, Inc. (ERG), and ERG's subcontractor, PG Environmental, LLC, (hereafter, collectively, EPA inspection team) inspected the municipal separate storm sewer system (MS4) program of the county of Chesterfield, Virginia (hereafter, the county, Chesterfield, or the county of Chesterfield). Discharges from the county's MS4 are regulated by Virginia Pollution Discharge Elimination System (VPDES) Permit Number VA0088609, effective March 24, 2003 (hereafter, the permit). The purpose of this inspection was to evaluate compliance with the permit, which is included in Attachment 1. The following personnel participated in this inspection:

Department of Environmental Engineering [1]:	Mr. Richard McElfish, Director Mr. Scott Flanigan, Water Quality Manager Ms. Laura Barry, Water Quality Analyst Mr. Robert Claudio, ESC Inspector for Area 5 Mr. Roger Clifton, ESC Inspector for Area 7 Mr. Weedon Cloe, Senior Water Quality Analyst Mr. Gregory King, ESC Inspection Supervisor for Team B Mr. Doug Pritchard, Erosion and Sediment Control (ESC) Program Administrator Mr. Ray Sadler, Administrative Analyst Mr. Jeff Underwood, ESC Inspection Supervisor for Team A
EPA Representatives:	Mr. Andrew Dinsmore, EPA Region 3, Stormwater Team Leader Ms. Allison Graham, EPA Region 3
Virginia DCR Representative:	Mr. Doug Fritz, MS4 Program Manager
EPA Contractors:	Mr. Mark Briggs, ERG Ms. Kavya Kasturi, ERG Mr. Scott Coulson, PG Environmental, LLC

The inspection focused specifically on the following sections of the Permit in relation to the county's MS4 program: (1) Part I.B.1.a - Structural and Source Control Measures; (2) Part I.B.1.b - Unauthorized Discharges and Improper Disposal; (3) Part I.B.1.c - Runoff from Industrial and Commercial Facilities; and (4) Part I.B.1.d - Runoff from Construction Sites.

Section II of this report presents background information on Chesterfield County's MS4 program. Section III presents information obtained during the inspection related to the specific permit requirements evaluated.

II. CHESTERFIELD BACKGROUND

The county of Chesterfield is located in central Virginia and is bordered by the James River, the Appomattox River, and the Cities of Richmond, Petersburg, Hopewell, and Colonial Heights. As of 2009, the county's population was estimated as 306,670. The county has a total area of 426 square miles.

Chesterfield's MS4 program is administered by the following departments:

[1] A copy of sign-sheets containing the names of all county participants in the inspection is included as Attachment 2.

- Department of Environmental Engineering;
- Department of Fire and EMS;
- Department of Public Utilities;
- Department of Parks and Recreation;
- Department of General Services; and
- Department of Planning.

III. INFORMATION OBTAINED DURING THE INSPECTION REGARDING PERMIT REQUIREMENTS

The EPA inspection team obtained information to evaluate the county of Chesterfield's compliance with the requirements of the permit, under which the county's MS4 system is covered. The permit, included in Attachment 1, has an effective date of 24 March 2003 and an expiration date of 23 March 2008. The EPA inspection team evaluated four permit components; observations regarding the county's implementation of each permit component are presented in the following four subsections. Attachment 3, the Exhibit Log, contains all referenced exhibits, and Attachment 4, the Photograph Log, contains all referenced photographs (additional photographs are available in the inspection record).

III.A. Requirement I.B – Storm Water Management Program

Part I.B of the permit contains requirements for the county to implement and refine a Storm Water Management Program including pollution prevention measures, management or removal techniques, use of legal authority, and other appropriate means to control the quality and quantity of stormwater discharged from the MS4. The staff responsible for the county's Storm Water Management Program include representatives from numerous organizational divisions. Exhibit 1 provides a list of the county's individual program components and the corresponding personnel tasked with their implementation. The EPA inspection team's observations related to this section of the permit are discussed below.

Observation 1. The county of Chesterfield did not maintain a written description of its current Storm Water Management Program.

Part I.B of the permit states that Chesterfield County must "continue implementation, and, where appropriate, refinement of the Storm Water Management Program….The permittee shall implement the provisions of the Storm Water Management Program required under this Part [I.B] as a condition of the permit. All applicable components of the Municipal Separate Storm Sewer System Phase I VPDES Permit Application submitted in accordance with 40 CFR 122.26, and all approved modifications are hereby incorporated by reference into the Storm Water Management Program."

Special Condition C.1 of the permit further requires the county to "ensure that all pollutants discharged from the municipal separate storm sewer system shall be reduced to the *maximum extent practicable [MEP]through the continued development and implementation of a comprehensive Storm Water Management Program* as specified in Part I.B of this permit [emphasis added]." EPA's most recent guidance on the MEP standard is found in the preamble to the final Phase II Storm Water Regulations which states "EPA envisions application of the MEP standard as an iterative process. MEP should continually adapt to current conditions and BMP effectiveness and should strive to attain water quality standards" (64 *Federal Register* 68754).

The EPA inspection team formally requested "current Storm Water Management Program document—written description of your current MS4 Programs/Program Areas (e.g., MS4 Program Plan)" (Item 1 in Exhibit 2, Team 2 Records Request). However, Chesterfield County produced program description documents that were not reflective of the current Storm Water Management Program. Specifically, the documents were part of Chesterfield County's VPDES Permit Reissuance submittal (Exhibit 3, Permit

Reissuance Description). It should be noted that the *Chesterfield County Annual Stormwater Management and Monitoring Report 2009, VPDES Permit No. VA0088609* (hereafter County Annual Report 2009), includes updates or routine changes associated with the day-to-day operations of the specific components of the Storm Water Management Program. However, Chesterfield County does not maintain a written description of its current MS4 Program. Furthermore, Chesterfield County does not maintain a centralized planning document that describes how the MEP standard will be achieved, or that collects and references the tools (e.g., procedural manuals, database inventories, inspection forms) that are critical to program execution.

EPA recently conducted MS4 inspections of three other Virginia permittees. The EPA inspection team noted that all of these communities had developed MS4 Program Plan documents, likely in response to previous MS4 audits conducted in 2005 by Science Applications International Corporation, as an authorized representative of EPA (hereafter, 2005 MS4 audits). Chesterfield County had not previously undergone an EPA compliance inspection of its MS4 Program, and had not developed a MS4 Program Plan document.

III.B. Requirement I.B.1.a – Structural and Source Control Measures

Part I.B.1.a of the permit contains requirements for the county to utilize structural and source control measures to reduce pollutants in stormwater runoff from commercial and residential areas, which the county addresses through a program herein referred to as its Structural and Source Control Measures Program. Within this program area, the inspection was focused on Parts I.B.1.a(1), (2), and (4) of the permit. State laws such as the Virginian Stormwater Management Law (§ 10-603 et seq. of the Virginia Code), the Virginia Stormwater Management Regulations (4VAC3-20 et seq.), and the Chesapeake Bay Preservation Act (§ 10.1-2100 et seq. of the Virginia Code) provide the underlying regulatory framework for the county's Structural and Source Control Measures Program. The county has promulgated the following ordinances pertaining to development and redevelopment: 1) the Chesterfield County Chesapeake Bay Preservation Ordinance (County Code Chapter 19, Article IV, Division 4, *Chesapeake Bay Preservation Areas)*, 2) Chesterfield County Upper Swift Creek Watershed Ordinance (County Code Chapter 19, Article IV, Division 5, *Upper Swift Creek Watershed)*, 3) Chesterfield County Floodplain Management Ordinance (County Code Chapter 19, Article III, Division 3, *Floodplain Districts and Dam Break Inundation Zones)*, and 4) Chesterfield County Erosion and Sediment Control Ordinance (County Code Chapter 8, *Erosion and Sediment Control)*.

The county has also developed a Stormwater Management Best Management Practice (SWM-BMP) manual for the designated Chesapeake Bay Preservation Area, or tidewater area draining to the bay. As indicated in the manual and explained by the County Department of Environmental Engineering Director, the entire county is a Chesapeake Bay Preservation Area. The manual covers topics such as plan submission, design criteria for SWM-BMPs, and water quality compliance calculations for meeting Chesterfield County Chesapeake Bay Preservation Ordinance requirements.

The primary staff responsible for the county's Structural and Source Control Measures Program include representatives of two operational teams within the County Department of Environmental Engineering: the Plans Review Team and Drainage Maintenance Operations Team. The Plans Review Team consists of two Principal Engineers and five Senior Engineers who review development plans for commercial sites and subdivisions for compliance with requirements pertaining to SWM-BMPs, drainage, floodplains, erosion and sediment control, and the county's Chesapeake Bay Preservation and Upper Swift Creek Watershed ordinances.

The county has instituted two SWM-BMP inspection and maintenance schedules that are in effect within Chesterfield County. Commercially-owned SWM-BMPs located outside the Upper Swift Creek watershed are inspected by the owner during the first year after certification and every three years

thereafter. The county utilizes maintenance agreements and/or easements in which the owner is responsible for both inspection and maintenance. Schedules are tracked through a database that determines when necessary maintenance must take place. The county's database also generates letters notifying owners of the need to perform an inspection.

In the Upper Swift Creek watershed, a source water protection area, the Drainage Maintenance Operations Team is responsible for both inspection and maintenance of SWM-BMPs located within residential subdivisions and commercially-owned properties. Inspection and maintenance is conducted using a six-month schedule.

The County Department of Environmental Engineering Administrative Analyst indicated that approximately 460 SWM-BMPs have been implemented in the county. The County Annual Report 2009 explains that a total of 188 SWM-BMPs received routine maintenance by county staff in 2009. Commercial, institutional, and governmental property owners maintained another 276 structures. Additionally, 372 SWM-BMPs were visually inspected by county staff during rain events in 2009 to monitor performance and function of the structures (e.g., risers draining, inflow and outflow conveyances clear).

On the basis of an office discussion and limited records review, no inconsistencies between the county's Structural and Source Control Measures Program and the permit were identified. Chesterfield County appeared to have the components in place which are indicative of a developed and structured program.

III.C. Requirement I.B.1.b – Unauthorized Discharges and Improper Disposal

Part I.B.1.b of the permit contains requirements for unauthorized non-stormwater discharges and improper disposal, which the county addresses through its illicit discharge detection and elimination program, detailed in its *Guidance Document for Field Screening and Detailed Investigation of the Storm Sewer System*, Revised May 21, 2002. The county is currently in the process of updating this document to reflect changes made to its procedures based on Center for Watershed Protection manuals. The Chesterfield County Illicit Discharge Ordinance (County Code Chapter 12, Article V, *Discharges to the Stormwater Sewer System)*, prohibits illicit discharges to the MS4. Within this program area, the inspection was focused on dry weather screening inspections and follow up and enforcement.

County staff estimated that hundreds of stormwater outfalls are present in the county. The county has two Dry Weather Screening Inspectors who inspect between 40 and 100 major outfalls (greater than 36") a year. One inspector indicated the county had a set a goal of 80 outfall inspections per year in its application for its next VPDES MS4 permit. Inspections are typically conducted between May and October. County staff indicated that most major outfalls have been visited at least once in the past eight years.

The county prioritizes dry weather screening inspections in heavy commercial areas, areas near lakes which may have retrofit potential, and areas which have not previously been inspected. Inspectors attempt to visit problem areas approximately every three years. County staff have conducted inspections on the Midlothian Turnpike and Hull Street corridor in recent years and plan to inspect outfalls along Route 1 in 2010.

After identifying the area to inspect, the County Dry Weather Screening Inspectors take the county storm sewer maps of the region, as well as a HydroLab (an immersible probe that provides instantaneous readings of dissolved oxygen, pH, conductivity, total dissolved solids, temperature and depth), manhole puller, and blank "Outfall Reconnaissance Inventory/Sample Collection Field Sheets" (outfall field sheet) to the inspection site. An example of a completed outfall field sheet is provided as Exhibit 4, Outfall 760-701-01 Field Sheet. An outfall field sheet is completed for each outfall inspected. If the County Dry Weather Screening Inspectors identify outfalls not currently represented on the storm sewer map, one of

the inspectors will draw and label the outfalls on the map. County staff indicated that the outfalls would later be added to the county's GIS database.

The county sends two inspectors to complete each outfall inspection. During the inspection, the inspectors work together to complete the basic outfall information portion of the inspection form, survey the outfall's condition, and take photos. The inspectors also note whether the outfall has the potential for a SWM-BMP retrofit. If enough water is present, the inspectors submerge the HydroLab to measure dissolved oxygen, pH, conductivity, total dissolved solids, temperature and depth. The inspectors also collect a sample to test in the county's onsite laboratory.

If problems are noted during the inspection, the inspectors record them on the inspection report and may take follow up actions. If illicit discharges are suspected, the inspectors track the source upstream and attempt to remedy the problem at the time of inspection. If infrastructure or clogging problems are noted, the inspectors send an email to the County Drainage Superintendent for resolution. The Drainage Superintendent does not notify the inspectors after the problem has been resolved. Outfalls where problems are present are tagged as "unhealthy" in the county's tracking database. The inspectors indicated that the "unhealthy" tag alerts the inspectors that a reinspection is necessary. After identifying that a revisit is necessary, the inspectors use the paper maps and paper inspection reports to determine whether revisit has been completed and to note observations during reinspections. The county is currently streamlining this process by transferring the records into the county's GIS database.

Observation 2. The county of Chesterfield was not providing adequate resources to complete annual dry weather screening inspections of identified outfalls.

Part I.C.4 of the permit requires that Chesterfield County "provide adequate finances, staff, equipment and support capabilities to implement all parts of the Storm Water Management Program required by Part I.B of this permit." Currently, MS4 staff have identified outfalls in both industrial and commercial areas, but due to a lack of staff, these outfalls are screened during dry weather every 2 to 3 years. Based on observations made by the EPA Inspection Team and discussions with Chesterfield County MS4 staff, Chesterfield County needs two additional trained field technicians to perform outfall screening in industrial and commercial areas as required by Part I.B.1.b(2) of the permit. However, Chesterfield County has no current plans to hire these technicians due to budget constraints.

Additionally, because of the current burden placed on MS4 staff, incorporating and updating outfall locations and storm sewers in the county's GIS database is not complete. The county is in the process of transferring paper maps into a universal GIS database that can be used by all Chesterfield County departments involved with the MS4. However, the mapping project is currently a side project of the water quality analyst who is also responsible for outfall inspections, development and revision of standard operating procedures, records management, statistics, stream assessments, and minor pollution complaint response. Discussions with the water quality analyst indicated one additional staff member is needed for timely completion of this task; that staff member would be devoted to updating GIS maps with outfall information including location, outfall descriptions, maintenance requests, and outfall inspection data. However, Chesterfield County has no current plans to hire this staff member.

Observation 3. The county of Chesterfield was not completing and documenting follow up action taken after evidence of an illicit discharge was observed.

An outfall field sheet for outfall 760-701-01 completed on August 13, 2009 indicated that rancid grease was present in the outfall and investigation was necessary to determine the source (Exhibit 4, Outfall 760-701-01 Field Sheet). The EPA inspection team formally requested documentation of follow up activity at this outfall (Exhibit 5, Team 1 Email Request). One of the dry weather screening inspectors present during the inspection stated that a restaurant was located upstream of the outfall and described the actions

taken immediately after the issue was identified (Exhibit 6, Outfall 760-706-01 Follow Up). The County Dry Weather Screening Inspectors spoke to the manager of the restaurant after inspecting the outfall and determined that the restaurant had cleaned its dumpster and dumpster pad a few weeks prior. One of the inspectors informed the manager that wash water should not enter the storm drain and provided the restaurant with his contact information and a copy of the industry guide to illicit discharge. The inspector stated that no documentation of the immediate follow up action was available and that no reinspections had occurred (Exhibit 6, Outfall 760-706-01 Follow Up). Without reinspection and documentation of follow up actions, the county cannot confirm that the outfall has been cleaned and that illicit discharges have ceased as required by Part I.B.1.b(3) of the permit.

Additionally, Part I.B of the permit requires the permittee to "reduce the discharge of pollutants from the municipal separate storm sewer system to the maximum extent practicable." However, the county does not consistently verify that maintenance needs for MS4 outfalls, identified through the outfall inspections, are addressed. County staff indicated that maintenance needs including debris and structural damage are emailed to the County Drainage Superintendent; however, the superintendent does not notify the water quality staff who are responsible for tracking the outfall conditions, after the maintenance issue has been addressed. Also, the inspectors do not notify the County Drainage Superintendent to clean outfalls after potential illicit discharges are identified, as in the case of outfall 760-706-01 described previously. This prevents the county from ensuring that pollutant discharges are reduced to the maximum extent practicable.

III.D. Requirement I.B.1.c – Runoff from Industrial and Commercial Facilities

Part I.B.1.c of the Permit contains requirements to monitor and control pollutants in stormwater discharges from certain industrial and commercial facilities. Within this program area, the inspection was focused on industrial and commercial facility identification and prioritization, inspections, and county industrial facility stormwater management.

III.D.1. Identification and Prioritization of Industrial and Commercial Facility Inspections

The county has developed the framework for an industrial inspection program. Included in the Chesterfield County industrial inspection program is the "Industrial Facility Inspection Protocol" which identifies the categories of facilities to be inspected, a prioritization scheme to select facilities for inspection, and the inspection frequency for each priority level.

The county has developed a list of all industrial and commercial facilities in Chesterfield County. The list contains approximately 334 facilities all of which are subject to industrial inspections under the "Industrial Facility Inspection Protocol" (Exhibit 7, Industrial Facility Inspection Protocol). Chesterfield County updates the list continually based on economic development information and VPDES permits.

Each facility is assigned an inspection priority category between 1 and 5. Category 1 facilities pose the least risk to the environment and do not require inspections but are maintained in the database for tracking purposes. Category 2 and 3 facilities have the potential for illicit discharges and require inspections on an as needed basis. Category 4 and 5 facilities have one or more of the following characteristics:

- Have an NPDES/VPDES permit,
- Are categorized under SARA Title III,
- Handle or create hazardous waste as a byproduct of their manufacturing process,
- Store hazardous materials, or
- Operate a municipal landfill.

These facilities pose the greatest environmental risk and require annual inspections.

III.D.2. Industrial and Commercial Facility Inspections

Chesterfield County derives its authority to conduct industrial and commercial inspections from Section 12-63 of the County Illicit Discharge Ordinance (Exhibit 8, Illicit Discharge Ordinance). The ordinance states that the county has "the authority to inspect and monitor discharges and sources of potential discharge to the storm sewer system to ensure compliance with this article, including the authority to enter upon private property to inspect or monitor such discharges or sources of potential discharge."

While the county has the authority to conduct inspections, routine inspections have not been performed since the industrial inspector position was eliminated in 2005 due to budget constraints. County staff indicated that, due to the lack of resources, industrial inspections are only conducted as a result of a citizen complaint, if observations provided by the other county agencies warrant an inspection, or when an illicit discharge is detected during an outfall inspection. In 2009, nine inspections were conducted in response to citizen complaints. County inspectors including fire code inspectors, zoning inspectors, and industrial pretreatment inspectors all conduct regular inspections and may notify the Water Quality staff if stormwater issues are observed during their inspections. The county offers a stormwater class two to three times a year, but not all county personnel who may be involved in identifying stormwater issues are required to attend the class. The class includes basic information on common stormwater pollutants and practices to minimize pollutant discharges to the storm sewer system; however, the class does not identify stormwater issues and requirements specific to industrial and commercial sites.

The county's "Industrial Facility Inspection Protocol" describes the facility information that should be reviewed prior to conducting an inspection. It also instructs the inspector to visually inspect the outfalls and storm drains on site and to conduct field testing using the HydroLab where dry weather flows are observed. The County Water Quality Manager described the typical steps taken during the inspection. The inspector first meets with the plant manager or the environmental supervisor and reviews the permits and stormwater pollution prevention and spill control and prevention plans. Next, an inspection of the internal areas is conducted focusing on floor drains and potential hot spots. The inspector takes photos and makes notes on a map of the facility. Outside the facility, the inspector notes impervious cover, uncovered storage areas, and vehicles in disrepair. The county has also developed industrial facility inspection forms that the inspector would use to record all pertinent information during the inspection. After an inspection is completed, the inspector uses the inspection form, his field notes, and his photos to write a memorandum to the facility describing the inspection and identifying corrective actions. The county has the ability to issue Notices of Violation if corrective actions are not completed.

Observation 4. The county of Chesterfield did not have an industrial inspector to complete the inspections required by Part I.B.1.c(1) and I.B.1.c(2) of the permit.

Part I.C.4 of the permit requires that Chesterfield "provide adequate finances, staff, equipment and support capabilities to implement all parts of the Storm Water Management Program required by Part I.B of this permit." While Part I.B.I.c(1) and I.B.1.c(2) require inspections of industrial and commercial facilities identified by the county, the industrial inspector position was eliminated in 2005 due to county budget constraints and this position remains vacant. Routine industrial inspections have not been performed in nearly 5 years.

On April 22, 2010, during an inspection of service drive areas and trash collection areas behind a grocery store, department store (Kmart), and home improvement store (Lowes) located along Jefferson Davis Highway, the EPA inspection team noted grease, paint stains, and trash being discharged to the MS4. Stormwater outfalls from these particular locations had not been previously inspected by the county and the Chesterfield County inspector accompanying the EPA inspection team stated that these observations would trigger an industrial inspection. Currently, it is unknown if an industrial inspection was initiated at these locations. The EPA inspection team formally requested documentation of the industrial inspection;

however, documentation has not yet been provided (Exhibit 9, Team 1 Email Industrial Inspection Records Request). Discussions with Chesterfield County MS4 staff indicated that ideally, two additional staff would be needed to fully implement the industrial inspection program. One inspector would be responsible for high priority facilities (designated as categories 4 or 5) and the other would inspect all other facilities (categories 1 through 3). However, Chesterfield County has no current plans to hire these staff members.

Observation 5. The county of Chesterfield did not have a formal training program for identifying stormwater issues on industrial and commercial sites.

County staff indicated that while they do not have an industrial stormwater inspector, other county departments, including Fire & EMS, Industrial Pretreatment, and Zoning, all conduct inspections and notify Water Quality when stormwater issues are noted. However, not all departments require staff to be trained on the identification of stormwater issues. The county offers a stormwater class, but not all county personnel who may be involved in identifying stormwater issues are required to attend the class. Without standardized training requirements, the county cannot consistently identify stormwater issues to "monitor and control pollutants in storm water discharges" from industrial and commercial facilities as required by Part I.B.1.c of the permit.

III.D.3. County-owned Industrial Facilities

Site: Chesterfield County Fleet Maintenance Facility – 9700 Lori Lane, Chesterfield, VA

On April 21, 2010, the EPA inspection team visited the County Fleet Maintenance Facility. The facility is International Organization of Standardization (ISO) 14001 certified. The inspection began inside the garage, proceeded to the parking and damaged vehicle storage area, and also included the vehicle wash rack and the storm ditch near the front of the property. A portion of the site near the wash rack was under construction. During the site visit, the EPA inspection team observed the following:

- An uncovered garbage truck containing trash was located on site near a drainage swale in the lot.
- A police vehicle with the hood removed, exposing the battery, radiator, and brake-fluid housing to precipitation was located on the unpaved portion of the parking area.
- Sediment had accumulated in the corner of the paved parking lot.
- A silt fence protecting the MS4 drainage channel from the construction area was undermined (Photographs 1 and 2). It appeared that the silt fence had been placed in the path of concentrated flow. Sediment was present in the channel.

Observation 6. The county of Chesterfield was not adequately minimizing pollutant discharges from county industrial facilities.

Part I.C.1 of the permit states that "the permittee shall ensure that all pollutants discharged from the municipal separate storm sewer system shall be reduced to the maximum extent practicable." An inspection of the vehicle maintenance lot found that a garbage truck containing open trash had been parked adjacent to a drainage swale in the lot, and water was flowing past the garbage truck to an offsite location. The garbage truck appeared to be waiting for maintenance. In addition, one vehicle was observed with the hood removed, exposing the battery, radiator, and brake-fluid housing to precipitation. Although the county-owned vehicle maintenance facility is ISO 14001 certified and appears to have good house-keeping measures to prevent release of fluids to the MS4, additional attention should be given to vehicles placed in the county's lot waiting for service.

III.E. Requirement I.B.1.d – Runoff from Construction Sites

Part I.B.1.d of the permit requires a program to implement and maintain structural and nonstructural best management practices to reduce pollutants in stormwater runoff from construction sites, which the county addresses through a program referred to as its Erosion and Sediment Control (ESC) Program. The County ESC Program components and applicable requirements related to this section of the permit are discussed below.

The primary staff responsible for the county's ESC Program include representatives of two operational teams within the County Department of Environmental Engineering: the Plans Review Team and Field Construction Inspections Team. The Plans Review Team is comprised of the same staff used in the county's Structural and Source Control Measures Program. The Field Construction Inspections Team is led by the County ESC Program Administrator and is organized into two teams (i.e., Team A and Team B), each with an ESC Inspection Supervisor and four ESC inspectors which are assigned to geographic areas (i.e., Areas 1 through 8). The ESC inspectors conduct inspections pursuant to the Virginia Erosion and Sediment Control Regulations. The Virginia Erosion and Sediment Control Regulations, 4VAC50-30-60B, Maintenance and inspections, requires Chesterfield County to "provide for an inspection during or immediately following initial installation of erosion and sediment controls, at least once in every two-week period, within 48 hours following any runoff producing storm event, and at the completion of the project prior to the release of any performance bonds."

Additionally, the County Department of Environmental Engineering has enlisted the assistance of the Building Inspections Department to conduct ESC inspections in conjunction with its building inspections of single-family dwellings. Building Inspections Department staff who conduct ESC inspections have received training through the DCR training and certification program. The Building Inspections Department staff are utilized to maintain a field presence and identify ESC issues at construction sites. The County Department of Environmental Engineering's dedicated ESC inspectors are used to conduct follow-up and obtain corrective action for the issues identified by Building Inspections Department staff at construction sites involving single family homes.

The county uses the Program Administration Status System (PASS), a land development program database, to maintain records pertaining to both the Structural and Source Control Measures Program and the ESC Program. Specifically, PASS is used to maintain records associated with state mandated requirements for plan review, project inspection activities and frequency, and regulatory performance reporting. In 2009, the departments of Environmental Engineering and Information Systems Technology collaborated in the development of the PASS interface, which is designed for staff to enter information about projects, permits, and sureties and also view that information as part of the Department of Environmental Engineering's processes.

Observation 7. The county of Chesterfield had not developed standard procedures for consistent and progressive escalation of its available enforcement actions based on inspection observations.

Part I.B.1.d of the permit requires a "program to continue implementation and maintenance of structural and nonstructural best management practices to reduce pollutants in storm water runoff *from* construction sites [emphasis added]."

The EPA inspection team observed that the county differentiates between what it considers to be a violation of local code and a discrepancy. PASS, for example, provides separate interface tabs for entering a discrepancy and entering a violation (Exhibit 10, PASS screenshot). The EPA inspection team questioned County Department of Environmental Engineering staff to determine how a discrepancy gets elevated to a violation (Exhibit 11, PASS permit status). The County ESC Program Administrator

explained that the county does not consider construction site operators to be in violation of local code until the operator has been issued a notice to comply, and the operator then fails to meet the timeframe for corrective action specified in the notice to comply. For example, a notice to comply dated August 12, 2009, lists a number of "deficiencies" and states "failure to comply within the time specified above will result in the issuance of a civil penalty" (Exhibit 12, Magnolia Lakes notice to comply). The County ESC Program Administrator further indicated that the county does not have an enforcement response plan or guide, and that enforcement is a discretionary process. Enforcement response plans typically provide clear guidelines for consistent and progressive escalation of the available enforcement actions based on inspection observations, particularly as it relates to recurring issues, repeat violations, and recalcitrant site operators. In contrast, the *Chesterfield County Inspectors Reference Manual* (hereafter, County ESC Inspection Manual), Section 6.0, describes a civil penalties process that begins with the inspector observing non-compliance, rather than at the initial step of identifying a discrepancy.

The EPA inspection team also questioned County Department of Environmental Engineering staff to determine what types of erosion and sediment control issues qualify as a violation of county code. The County ESC Program Administrator and ESC Inspection Supervisor for Team A indicated that they could not recall a situation that was an immediate violation of county code, and that a sediment release from a construction site is handled the same as any other type of "discrepancy." Therefore, in the event of a sediment release, construction site operators would not be found in violation of local code until the operator has been issued a notice to comply, and the operator then failed to meet the timeframe for corrective action specified in the notice to comply. In other words, the County ESC Inspectors would provide construction site operators with the opportunity to correct a sediment release to the MS4, rather than qualifying the matter as an immediate violation of county code. Under this approach, Chesterfield County does not consider each construction site boundary as a point of operational control to reduce pollutants in stormwater runoff *from* construction sites, particularly in the event of a sediment release or discharge from a construction site.

As evidenced below, the EPA inspection team observed an example of this approach at a county school district construction site. Specifically, the EPA inspection team witnessed an inspection of Clover Hill High School, Genito Road (County Land Disturbance Permit No. 202868) performed by the County ESC Inspector for Area 7. During the EPA inspection team's site visit on April 22, 2010, it was observed that silt fence and stone installed in an area of concentrated flow along Old Hundred Road had failed (Photographs 3 through 6), and sediment had been discharged from the construction site boundary (Photographs 4, 5, 7, and 8) through a drainage culvert leading under Old Hundred Road (Photographs 9 and 10). The County ESC Inspector for Area 7 did not identify this issue while on site. Both of the County ESC Inspection Supervisors (Team A and Team B) were present during the site visit, but did not express that the sediment discharged from the construction site boundary was an actionable deficiency.

Subsequent to the MS4 Inspection, the EPA inspection team reviewed the county's inspection files containing county inspection records and follow-up responses for three construction sites that were visited as part of the MS4 Inspection. The specific county inspection records obtained and reviewed were the following: (a) Clover Hill High School, Genito Road (County Land Disturbance Permit No. 202868) records from September 16, 2009 to March 30, 2010; (b) Magnolia Lakes (County Land Disturbance Permit No. 202732) records from August 11, 2009 to November 13, 2009; and (c) Swift Creek Middle School Auditorium Addition (County Land Disturbance Permit No. 300085) records from November 3, 2009 to April 6, 2010. Collectively, 33 county ESC inspections were conducted at the three construction sites during the above-specified time periods. None of the 33 county ESC inspections identified a sediment discharge beyond the construction site boundary as an actionable discrepancy or violation. In contrast, the EPA inspection team observed sediment that had been discharged beyond the construction site boundary at both Clover Hill High School, Genito Road and Magnolia Lakes (see Observation 9 below for additional details).

In multiple inspection reports for the Clover Hill High School, Genito Road construction site, the County ESC Inspector for Area 7 indicated "site not stabilized as required" and qualified these issues as discrepancies, but the inspection records did not show progressively stricter enforcement for similar and/or recurring discrepancies (Exhibit 13, Clover Hill High School PASS Inspection). Furthermore, these inspection records did not have sufficient detail to demonstrate that specific corrective actions were taken, and appropriate follow-up enforcement responses were conducted.

Observation 8. The county of Chesterfield ESC inspectors did not assess non-sediment, construction site pollutant sources.

Part I.B.1.d of the permit requires a "program to continue implementation and maintenance of structural and nonstructural best management practices [i.e., temporary construction site BMPs] to reduce *pollutants* in storm water runoff from construction sites [emphasis added]."

In contrast to this requirement, the County ESC Inspectors have not been tasked with assessing construction site pollutant sources other than sediment-generating sources. The County ESC Inspection Supervisor for Team A explained that the County ESC Inspectors can only enforce the Chesterfield County Erosion and Sediment Control Ordinance under authority granted by the Virginia Erosion and Sediment Control Law. The Virginia Erosion and Sediment Control Regulations (4VAC50-30) have been promulgated to administer, implement, and enforce the Virginia Erosion and Sediment Control Law (§ 10.1-560 et seq. of the Virginia Code). However, the Virginia Erosion and Sediment Control Regulations pertain only to "erosion and sediment control concerns," and mandate the adoption of erosion and sediment control programs by localities, which dictates the scope of the local program (Exhibit 14, VESCR). Section 8-1.1 of the Chesterfield County Erosion and Sediment Control Ordinance states "pursuant to Va. Code § 10-562, Chesterfield County adopts the Virginia Erosion and Sediment Control Regulations as the authority that governs the county's local erosion and sediment control program." Accordingly, the county's inspection checklist does not include a non-sediment component or question set, and the PASS database system does not track non-sediment deficiencies at construction sites (Exhibit 15, PASS Inspections Checklist).

The EPA inspection team conducted site visits at the following three construction sites located in the jurisdictional boundaries of the county and/or served by the county's MS4: 1) Clover Hill High School, Genito Road (County Land Disturbance Permit No. 202868), 2) Magnolia Lakes (County Land Disturbance Permit No. 202732), and 3) Swift Creek Middle School Auditorium Addition (County Land Disturbance Permit No. 300085). At two of the three construction sites, the EPA inspection team observed deficiencies pertaining to non-sediment pollutants such as construction chemicals, fertilizers, and fuels.

At Clover Hill High School, Genito Road, a county school district construction site, pallets of soil amendments were stored outdoors without overhead coverage (Photograph 11). The soil amendments included lime and fertilizers. One bag of fertilizer was open and the contents were wet, indicating that the soil amendments had been exposed to stormwater contact (Photographs 12 and 13). In addition, a partially-filled container of concrete chemical was stored outdoors without overhead coverage (Photograph 14).

At the Swift Creek Middle School Auditorium Addition, another county school district construction site, diesel residues were present on a fuel tank (Photograph 15). Although the fuel tank was placed in a secondary containment tub, it had accumulated standing water (Photograph 16). Standing water has the potential to increase stormwater contact with pollutants, particularly during fueling and loading operations. Additionally, a partially-filled container of concrete chemical was stored outdoors without overhead coverage (Photograph 17).

During the closing conference, the EPA inspection team had a dialogue with the county on the possibility of addressing non-sediment pollutants through the County Illicit Discharge Ordinance and empowering the County ESC Inspectors to assess non-sediment construction site pollutant sources such as: construction chemicals; vehicle and equipment maintenance and fueling; paving and grinding; spill prevention and control; solid waste; concrete waste and wash water; and sanitary/septic waste (e.g., portable toilets).

Observation 9. The county of Chesterfield's plan review and approval, field inspection, and plan change processes were not in accordance with the Chesterfield County Erosion and Sediment Control Ordinance for the Magnolia Lakes construction site.

Part I.B.1.d(1) of the permit requires Chesterfield County to "continue to implement the requirements of the Erosion and Sediment Control Ordinance for land disturbing activities." The Chesterfield County Erosion and Sediment Control Ordinance requires all applicants for county land-disturbance permits to submit an erosion and sediment control plan for review and approval by the county.

Section 8-7 of the Chesterfield County Erosion and Sediment Control Ordinance states "an approved [ESC] plan may be changed by the plan-approving authority when: (a) an inspection reveals that the plan is inadequate to control erosion and sedimentation and to satisfy applicable laws and/or regulations; or (b) the responsible land disturber finds that because of changed circumstances or other reasons the approved plan cannot be effectively carried out, and proposed amendments to the plan, consistent with the requirements of this chapter [Chapter 8, Erosion and Sediment Control], are agreed to by the plan-approving authority [Chesterfield County]."

The EPA inspection team conducted a site visit at the Magnolia Lakes (County Land Disturbance Permit No. 202732) construction site located in the jurisdictional boundaries of the county and/or served by the county's MS4. Several issues were observed at the Magnolia Lakes construction site which indicated deficient application of the county's plan review and approval, field inspection, and plan change processes. These issues are discussed below.

Sheet No. C21 of the county-approved Magnolia Lakes ESC Plan, Phase 2 specifies the implementation of temporary Sediment Basin #4, and that "all disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved" (Exhibit 16, Sheet C21). The criteria for final stabilization through the use of a permanent vegetative cover are specified in the Minimum Standards of the Virginia Erosion and Sediment Control Regulations (4VAC50-30-40). Minimum Standard No. 3 states "a permanent vegetative cover shall be established on denuded areas not otherwise permanently stabilized [e.g., paved]. Permanent vegetation shall not be considered established until a ground cover is achieved that is *uniform, mature enough to survive, and will inhibit erosion* [emphasis added]."

In contrast to Minimum Standard No. 3, the EPA inspection team observed that the intended contributing area to Sediment Basin #4 had not achieved final stabilization with permanent vegetation, and denuded areas were not otherwise permanently stabilized. Specifically, a uniform vegetative cover was not established, and rill and gully erosion was observed in the contributing area (Photographs 18 through 20). The County ESC Inspector for Area 5 indicated that the site had been seeded multiple times, but the site operator had difficulty getting the seed established.

Although the county-approved Magnolia Lakes ESC Plan, Phase 2 specifies the implementation of temporary Sediment Basin #4, and that "all disturbed areas are to drain to approved sediment control measures at all times during land disturbing activities and during site development until final stabilization is achieved," Sediment Basin #4 had been removed and/or filled-in. Photograph 21 shows the general area

where the former Sediment Basin #4 had been located. The County ESC Inspector for Area 5 explained that he had approved the removal of Sediment Basin #4 based on an assessment of stabilization. The most recent county ESC inspection was conducted on November 13, 2009. The ESC Inspection Supervisor for Team B explained that the site had been idle for some time, and the November 13, 2009 inspection was the most recent because the operator had just recently been issued a building permit for vertical construction.

Section 8-5 of the Chesterfield County Erosion and Sediment Control Ordinance states that the county has the right to enter property having a land-disturbance permit "for the purpose of inspecting the property to determine whether the requirements of this chapter [Chapter 8, Erosion and Sediment Control] and of the approved erosion and sediment control plan are being met." In his November 13, 2009 inspection report, the County ESC Inspector for Area 5 indicated "all denuded areas stabilized as required" and "all required structural control practices installed properly" (Exhibit 17, Magnolia Lakes PASS Inspection). However, this was not the case at the time of the EPA inspection team's site visit on April 22, 2010. According to the ESC Inspection Supervisor for Team B, the removal of Sediment Basin #4 had been approved by the County ESC Inspector for Area 5 in a phone conversation and had not been formally documented. Based on this body of evidence, the change in the county-approved ESC plan was not carried out in accordance with Section 8-7 of the Chesterfield County Erosion and Sediment Control Ordinance.

Moreover, the EPA inspection team observed a demonstrated need for the former Sediment Basin #4. Specifically, an eroded flow pathway was observed leading from the former Sediment Basin #4 contributing area (Photographs 21 and 22). Sediment had accumulated in a down-gradient area where rock had been placed, which was likely the former Sediment Basin #4 outlet location (Photograph 23). Sections of the silt fence down-gradient of the former Sediment Basin #4 had collapsed, and sediment was observed beyond the silt fence (Photographs 24 through 26). Due to the removal of Sediment Basin #4 and the collapsed silt fence, there was a resulting discharge of sediment beyond the construction site boundary.

Additionally, a turbidity curtain had been installed approximately 75 feet down-gradient of the former Sediment Basin #4 outlet, in the receiving waterbody referred to as Sportsman Lake (Photograph 27). In another area of the site, a second turbidity curtain had been installed approximately 50 feet down-gradient of the existing Sediment Basin #1 outlet, in Sportsman Lake (Photographs 28 and 29). Part I.B.1.d(1) of the permit requires Chesterfield County to "continue to implement the requirements of the Erosion and Sediment Control Ordinance for land disturbing activities." Section 8-6(d) of the Chesterfield County Erosion and Sediment Control Ordinance states "the [county] environmental engineer shall require all erosion and sediment control plans to comply with the conservation standards and specifications contained in the Virginia Erosion and Sediment Control Handbook before they are approved." Sheet No. C21 of the county-approved Magnolia Lakes ESC Plan, Phase 2 specifies the implementation of turbidity curtains in these locations (Exhibit 16, Sheet C21). In contrast, the *Virginia Erosion and Sediment Control Handbook*, Third Edition, 1992, Standard and Specification 3.27, Turbidity Curtain, states that turbidity curtains are applicable "where intrusion into the watercourse by construction activities and subsequent sediment movement is unavoidable." Site conditions observed by the EPA inspection team did not suggest that intrusion into Sportsman Lake was unavoidable. As a result, the county-approved Magnolia Lakes ESC Plan was not in accordance with Section 8-6(d) of the Chesterfield County Erosion and Sediment Control Ordinance.